WINCOR
NIXDORF

POS Motherboard

D425/D525 CPU

User Manual

We would like to know your opinion on this publication.
Please send us a copy of this page if you have any constructive criticism.
We would like to thank you in advance for your comments.

With kind regards,

Your opinion:

Wincor Nixdorf International GmbH
Documentation RD HWD01
Wohlrabedamm 31
D-13629 Berlin
E-Mail: retail.documentation@wincor-nixdorf.com

Order No.: ***01750220414B*** *(POS Motherboard with D425/D525 CPU)*

POS Motherboard
D425/D525 CPU

User Manual

Edition June 2012

All brand and product names mentioned in this document are trademarks of their respective owners.

Copyright © Wincor Nixdorf International GmbH, 2012

The reproduction, transmission or use of this document or its contents is not permitted without express authority.
Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.
Delivery subject to availability; technical modifications possible.
Refer to protection notice ISO 16016

Contents

Introduction 9

Basic Features of the D425/D525 Motherboard 10
Processors 10
Features 10

Motherboard Specification 11
Blockdiagram of D425/D525 Motherboard 11
Motherboard Mechanical Arrangement 12
Motherboard PCB Dimension 12
External I/O Connector 13
Internal I/O Connector 13
Jumper Setting 14
Power Consumption of D425/D525 Motherboard 14
Maximum Current Rating for External Peripherals 15
Supported Power Modes (Sx) 15
Thermal Management 15
CPU Support 16
Memory Support 16
Graphics Subsystem 16
System Clock Generator 17
Fast Ethernet LAN Interface 17
Super I/O Controller 17
SATA II Interface 18
IDE Interface 18
CPU Fan and System Fan 18
Audio 19
USB Interface 19
Serial Interfaces COM1-5 20
Parallel Port 20
PS/2 Keyboard and Mouse Interface 20
Front Panel Interface 20
Cash Drawer Interface 21
  Cash Drawer Interface I/O 310h 21
Intrusion Detect Interface 21
TPM 21
System Beeper 21

Connector and Pin Assignments 22
External Connectors 22
  PS/2 Keyboard and Mouse Connector 22

Fast Ethernet LAN Connector 22
USB Connectors 23
COM1 Connector 23
COM2*-5* Connectors 24
Type: DSUB-9 pin 24
VGA Connector 25
Audio Connector 25
LPT Connector 26
Connectors and Headers for internal Connection 27
SATA 27
USB Header 27
Front Panel Interface Connector 28
Cash Drawer Interface Connector 28
Fan Connector (with PWM FAN Speed Control) 29
Intrusion Interface 29
ATX Power 29
PATA IDE 30
PCI 31

Technical Data 35

Changing the Battery 37

Addendum 38
Sleep States 38
LED LAN (RJ45) 38

BIOS Setup 39
Standard BIOS Version 39
BIOS Menu Bar 40
Legend Screen 40
General Help 41
Scroll Bar 41
Sub-Menu 41
Info Screen 42
Product Name 42
BIOS Version 43
MAC Address 43
UUID Info 43
System, Main board, Power Supply 43
Main Menu 43
System Time [XX: XX: XX] 43
System Date [XX/XX/XXXX] 44
Advanced Menu 44
Sub Menu ➢ Hardware Monitoring 44
Sub Menu ➢ SuperIO Information 45
Sub Menu ➢ CPU Configuration 46
Sub Menu ➢ IDE Configuration 47
Sub Menu ➢ USB Configuration 49

Sub Menu > Hardware Control 50
Sub Menu ➢ North Bridge Configuration 53
Boot Menu 53
Boot Settings Configuration 54
Bootup Num-Lock [On] 54
PS/2 Mouse Support [Auto] 54
Security Menu 55
Change Supervisor Password 55
Change User Password 55
Intrusion Detection [Disabled] 55
Exit Menu 56
Save Changes and Exit 56
Discard Changes and Exit 56
Discard Changes 56
Load Defaults 57
Test Points Codes 57
Bootblock Initialization Code Checkpoints 57
POST Code Checkpoints 58
Boot Block Beep Codes 60
POST BIOS Beep Codes 60
Troubleshooting POST BIOS Beep Codes 60

Abbreviations 61

Introduction

This User Manual describes the features of a Motherboard based on the INTEL D425/D525 processor and ICH8M chipset in mITX form factor.

This new D425/D525 Motherboard is designed for Wincor Nixdorf's BEETLE /i8A, BEETLE / SII+ family and BEETLE /mini.

D425/D525 Board
No Amplifier onboard
Cash drawer support onboard
Fast Ethernet 100Mbit
Target system: B/SII+, B/i8A-3, B/mini

Basic Features of the D425/D525 Motherboard

Processors

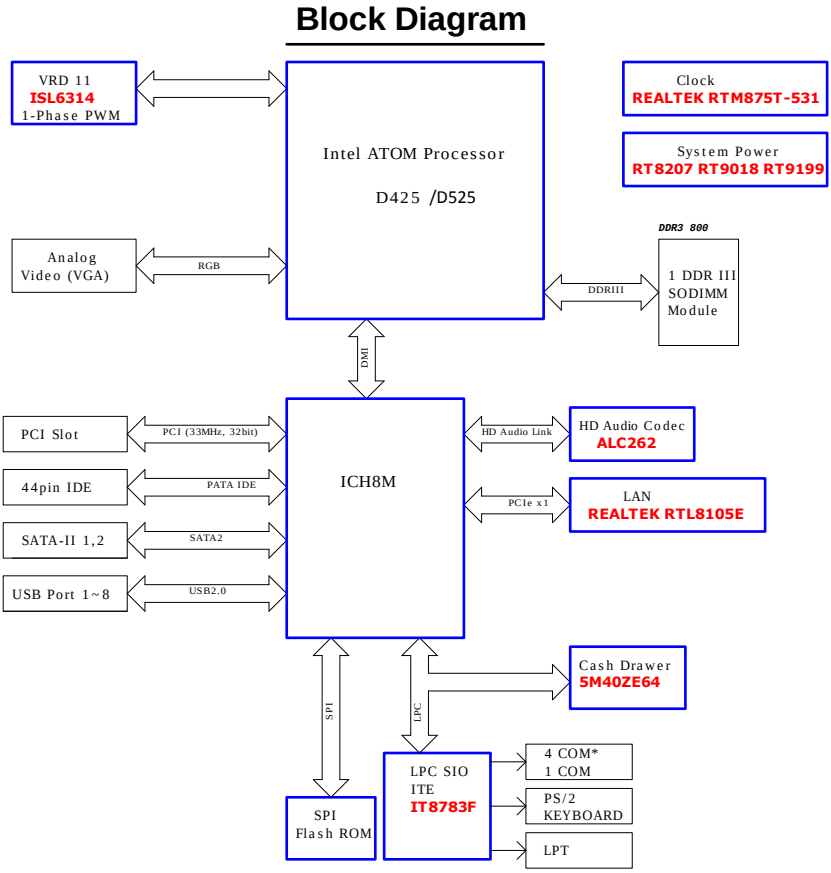
The features of the motherboard based on the INTEL D425/D525 processor and ICH8M chipset in mITX form factor.

Features

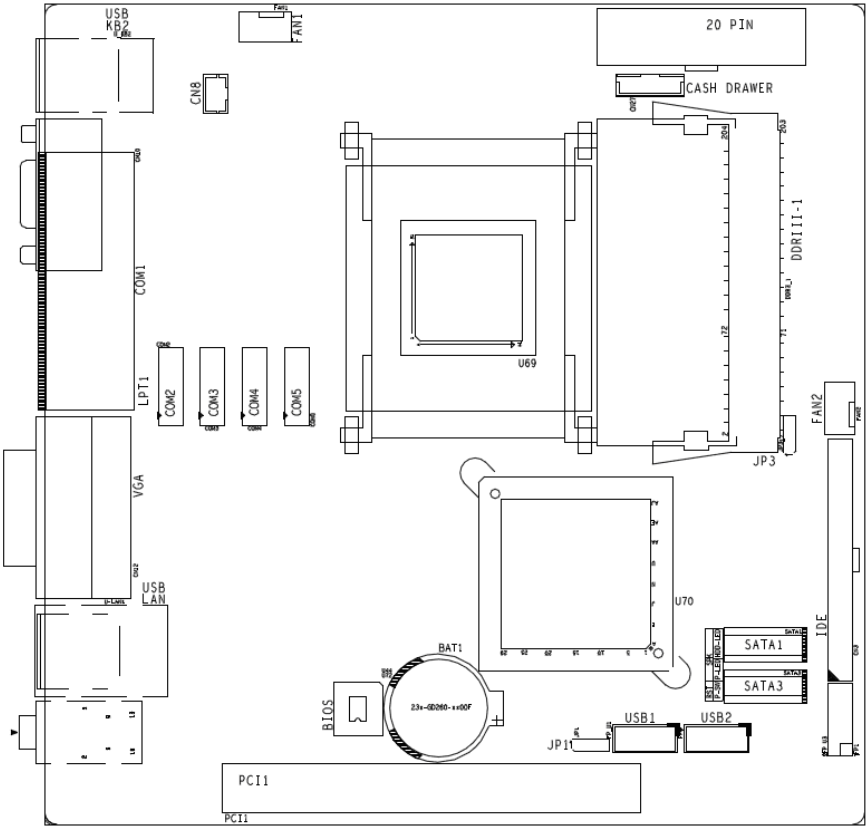
- Intel ATOM processor D425 (single core), 1.8GHz/
  Intel ATOM processor D525 (dual core), 1.8GHz
- Integrated Intel 3rd Gen Graphics Core
- 1 VGA
- HDD SATA II interface (2 ports)
- HDD PATA interface 44 pin for compact flash module
- Supports chassis fan with automatic PWM speed control
- Fast Ethernet 100Mbit LAN onboard
- One DDR3 SDRAM (SO-DIMM) socket, up to 2GB / 800MHz supported
- One PCI slot supporting SMBUS
- 5 COM ports (4 ports have the option to be powered COM)
- 8 USB ports
- 1 Cash drawer Altera CPLD onboard
- Intel HD audio controller with microphone, line in and line out connectors
- NVRAM module support via PCI riser card
- OS support includes Windows 7
- Long term availability for 5 years (Intel embedded roadmap)

Motherboard Specification

Blockdiagram of D425/D525 Motherboard



Motherboard Mechanical Arrangement

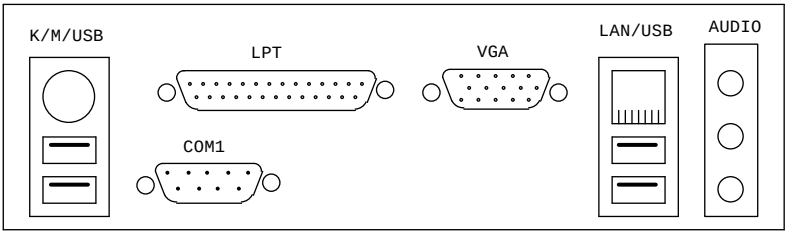


Motherboard PCB Dimension

D425/D525 motherboard (including I/O shield) follows mITX standard and therefore PCB mechanical dimension is 170mm x 170mm.

External I/O Connector

External I/O connectors are arranged as illustrated here:



Interface	Connector-Type
COM1	9 pin D-sub male
LPT	25 pin D-sub female
Keyboard, Mouse, USB	6 pin Mini Din + stacked dual USB series A
LAN, USB	RJ45 Ethernet + stacked dual USB series A
VGA	15 pin HDD-sub female
AUDIO Line Out	3,5 mm female
AUDIO Line In	3,5 mm female
AUDIO Microphone	3,5 mm female

Internal I/O Connector

Interface	Connector-Type
DDR3 SO-DIMM	1pcs 204 pin micro edge connector
PATA IDE	1pcs 44 pin header, 2mm (425 only)
Hard disk (SATA)	2pcs 7 pin Standard SATA headers
3.3V, 5V, 12V Supply	ATX 20 pin power connector
USB port 4-8	2pcs 2x5 pin headers, 2.54 mm

COM* 2-5	4pcs 2x7 pin headers (2.0mm shrouded)
FAN	2pcs 4 pin
PCI	1x standard PCI connector
Front panel	1pcs 2x6 pin header, 2.54mm
Chassis intrusion	1pcs 3 pins header (2.0mm shrouded)
Cash drawer	1pcs 6 pins header (2.0mm shrouded)

Jumper Setting

Jumper	Connector-Type	Setting
JP1	CMOS clear	1-2 default, 2-3 CMOS clear

Power Consumption of D425/D525 Motherboard

D425/D525 motherboard is powered by 3.3V, 5V, 5Vstby, 12V and -12V from a standard ATX power supply. The maximum current is specified as follows, this does not include external connected peripherals.

Voltage	I max	P
3.3V	1A	3.3W
5V	1A	5W
5VSB	0.5A	2.5W
12V	1.5A	18W
-12V	0.1A	1.2W

Maximum Current Rating for External Peripherals

Interface	Voltage	I max
Powered COM (COM 2-5 total)	5V	1A
Powered COM single port	5V	0.3A
Powered COM (COM 2-5 total)	12V	1A
Powered COM single port	12V	0.6A
USB, single port	5V	0.5A
USB, all ports total	5V	2A
PS/2	5V	0.5A
DVI, VGA	5V	0.1A

Supported Power Modes (Sx)

D425/D525 Motherboard supports power states S0, S3, S4 and S5. Wake up events from sleep states are supported from USB ports, COM1 ring indicator, internal CMOS clock, PS2 Keyboard and Ethernet.

Power management supports ACPI 3.0 and APM1.2.

Thermal Management

D425/D525 Motherboard supports 2 FAN connectors. The 1st FAN connector is reserved for CPU fan. The 2nd FAN connector is connected to power supply fan and detects it's rotating speed.

Supported CPUs and it's TDP and maximum junction temperature:

CPU	TDP	Idle power	Max Tj
D425	10W	4W typ.	100 °C
D525	13W	4.8W typ.	100 °C
ICH8M	3W	2W	

CPU Support

Due to the fact Atom CPU comes in a BGA package it is soldered to PCB and can not be changed.

Processor	Core	Clock Speed	Footprint	Max TDP
D425	1	1.8GHz	FCBGA559	10W
D525	2	1.8GHz	FCBGA559	13W

Memory Support

The motherboard has one SO-DIMM socket supporting single channel, unbuffered, no ECC DDR3 SDRAM. Memory size of 1GB and 2GB.

DIMM Capacity	DRAM Device Technology	DRAM Organization	Ranks
1GB	1GB	64M X 16	2
2GB	2GB	128M X 16	2
1GB	1GB	128M X 8	1
2GB	2GB	256M X 8	1

The motherboard supports the following memory features:

- 667 / 800 MHz unbuffered SDRAM SO-DIMM
- Non-ECC
- 1.5V voltage rating
- BIOS automatically detects memory type, size, and speed

If higher frequency memory modules than 800MHz are used, the frequency will be limited to 800MHz automatically.

Graphics Subsystem

Graphics support is via the internal graphics accelerator of the D425/D525 processor to provide single display.

Main features of integrated GPU are:

- Intel® Dynamic Video Memory Technology support 4.0, up to 384MB
- Directx® 9 compliant Pixel Shader® v2.0
- 400 MHz render clock frequency
- Intel® Clear Video Technology
- MPEG2 Hardware Acceleration
- ProcAmp

The analogue VGA port utilizes an integrated 350MHz RAMDAC capable of driving a standard progressive scan monitor resolution up to 2048 x 1536 at 60Hz.

Signal	Voltage level
R,G,B	0.7VP-P @75OHM
HSYNC, VSYNC	5.0V
DDC CHANNEL	OPEN DRAIN, 5.0V TOLERANT

System Clock Generator

The clock generator is conforming to CK505 specification and made by Realtek RTM875T-531. As 2nd source ICS9LPRS511 is available.

Fast Ethernet LAN Interface

Fast Ethernet LAN interface is provided through PCI-e based Ethernet Controller by Realtek RTL8105E.

Super I/O Controller

Super I/O controller IT8783 from ITE provides the following functions:

- Five 16C550 UARTs
- PS/2 keyboard and mouse controller
- Two automatic fan speed controller

- Two tachometer inputs
- Hardware monitor

SATA II Interface

The ICH8M has three integrated SATA host controller that supports independent DMA operation and data transfer rates up to 3.0Gb/s.

SATA Port ICH8M	Usage on Motherboard
Port #0	On-board connector
Port #1	Not connected
Port #2	On-board connector

IDE Interface

D425/D525 Motherboard provides a standard PATA IDE 44 pin interface intended for CF interface.

CPU Fan and System Fan

D425/D525 motherboard supports automatic fan speed control by pulse width modulation (PWM, 4pin fan connector).

If a 3 pin fan is used (BEETLE /mini) there is no rpm control.

The 2nd CPU fan connector FAN2 is indented to sense power supply fan.

System	FAN connector	Used as
BEETLE /SII+	FAN1	Not used
	FAN2	Power supply
BEETLE /i8A	FAN1	Not used
	FAN2	Power supply
BEETLE /mini	FAN1	CPU fan
	FAN2	Not used

Audio

An INTEL HD Audio Link is provided thru ICH8M. It is used with a Realtek HD Audio Codec ALC662 providing a low cost solution. In case of EOL the ALC262 is prepared for AVL use.

Supported interfaces are:

- Line-out
- Mic-in
- Line-in

USB Interface

The ICH8M contains two EHCI compliant host controller that support USB high speed signalling. High speed USB 2.0 allows data transfers up to 480Mb/s. The ICH8M also contains five UHCI controller that support USB full speed and low speed signalling.

EHCI ICH8M Port	Connection on Motherboard
0	USB1 connector pin 1,3,5,7
1	USB1 connector pin 2,4,6,8
2	USB2 connector pin 1,3,5,7
3	USB2 connector pin 2,4,6,8
4	PS/2 / USB connector upper port
5	PS/2 / USB connector lower port
6	LAN / USB connector lower port
7	LAN / USB connector upper port
8	Not used
9	Not used

Serial Interfaces COM1-5

D425/D525 Motherboard provides five serial ports. COM1 is the standard serial
interface. On the DSUB-9 pin male connector all signals are available including the modem signals RI and DCD.

The I/O assignments of the powered serial ports (COM2* to COM5*) deviate from the standard as it is equipped with system voltage of +5V and +12V instead of the signals RI and DCD. These serial ports are routed to 2x7 pin headers (2.0mm shrouded) and to DSUB-9 pin female
connectors (via cables).

All serial ports comply with RS-232 signalling level voltage.

Parallel Port

D425/D525 motherboard supports a parallel port according to IEEE1284.

PS/2 Keyboard and Mouse Interface

The keyboard and mouse controller is part of the Super I/O chip. The PS/2 interface is available on a Mini DIN connector.

Front Panel Interface

The motherboard provides a front panel interface, supporting the following features:

- Power ON/OFF button
- Reset button
- Status LED, showing Active (Green), Standby (Green, flashing), Shutdown (Red), HDD Activity (Amber, flashing)
- System beeper

Cash Drawer Interface

Cash Drawer Interface I/O 310h

This Cash Drawer interface is provided thru a 6pin shrouded header. From this header a cable goes to the power supply where the cash drawer output is located. Reading of I/O address 310h gets back status of cash drawer and power button. A 1 indicates an open cash drawer. A 0 indicates a closed or not connected cash drawer.

7	6	5	4	3	2	1	0
CD2	CD1	PB	x	x	x	x	x

Writing a 1 to address 310h bit 6 or 7 initiate a 500ms active low signal on the cash drawer output 1 or 2. Writing 1 to both bits at the same time is not supported by hardware. In this case both outputs stay inactive.

Intrusion Detect Interface

D425/D525 Motherboard supports an intrusion detect interface. This is a 3pin shrouded header.

TPM

D425/D525 Motherboard is prepared for TPM IC. This feature is not assembled.

System Beeper

D425/D525 Motherboard supports a system beeper interface connector. This is part of the front panel interface.

Connector and Pin Assignments

External Connectors

PS/2 Keyboard and Mouse Connector

ConnectorType: Mini-DIN Female

Pin Number	Function
1	KB Data
2	GND
3	+5V
4	KB Clock
5	MS Data
6	MS Clock

Fast Ethernet LAN Connector

Type: RJ45 connector (Stacked LAN + USB Connector)

Pin Number	Function
1	Bi-directional Pair A+
2	Bi-directional Pair A-
3	Bi-directional Pair B+
4	Not used
5	Not used
6	Bi-directional Pair B-
7	Not used
8	Not used

USB Connectors

Type: Stacked USB Type A Connector, male
(Stacked LAN + USB Connector)

Pin Number	Function
1	Fused +5V
2	USB D-
3	USB D+
4	GND

COM1 Connector

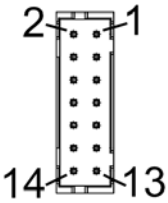
Type: DSUB-9 pin, male

Pin Number	Function
1	DCD - Data Carrier Detect
2	RXD - Serial Data In
3	TXD - Serial Data Out
4	DTR - Data Terminal Ready
5	GND
6	DSR - Data Set Ready
7	RTS - Request To Send
8	CTS - Clear to Send
9	RI - Ring Indicator

COM2*-5* Connectors

Connector type: 2x7 pin header JST B14B-PHDSS or similar

Pin Number	Function
1	+5V
2	GND
3	DCD - Data Carrier Detect
4	GND
5	CTS - Clear to Send
6	DTR - Data Terminal Ready
7	RTS - Request To Send
8	TXD – Serial Data Out
9	DSR - Data Set Ready
10	RXD - Serial Data In
11	RI - Ring Indicator
12	GND
13	+12V
14	GND



Type: DSUB-9 pin

Female (Tyco P/N: 5747844-4)

Pin Number	Function
1	+12V
2	RXD - Serial Data In
3	TXD - Serial Data Out
4	DTR - Data Terminal Ready
5	GND
6	DSR - Data Set Ready
7	RTS - Request To Send
8	CTS - Clear to Send
9	+5V

VGA Connector

Type: DSUB-15 pin, DSUB-15 female

Pin Number	Function
1	RED
2	GREEN
3	BLUE
4	n.c.
5	GND
6	GND
7	GND
8	GND
9	+5V
10	GND
11	n.c.
12	DDC SDA
13	HSYNC
14	VSYNC
15	DDC SCL

Audio Connector

Type: Stacked Audio Jack

Port Number	Function
Top	Line out
Middle	Line In
Bottom	Microphone In

LPT Connector

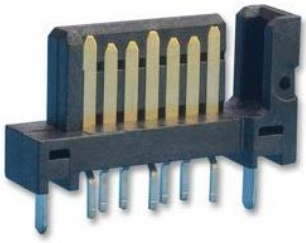
Pin Number	Function
1	/STROBE
2	D0 Data Bit 0
3	D1 Data Bit 1
4	D2 Data Bit 2
5	D3 Data Bit 3
6	D4 Data Bit 4
7	D5 Data Bit 5
8	D6 Data Bit 6
9	D7 Data Bit 7
10	/ACK Acknowledge
11	Busy
12	PE Paper End
13	SEL Select
14	/AUTOFD Autofeed
15	/ERROR Error
16	/INIT Initialize
17	/SELIN Select In
18-25	GND

Connectors and Headers for internal Connection

SATA

Type: 7 pin SATA connector, LD180F-S16P (Foxconn) or equivalent.

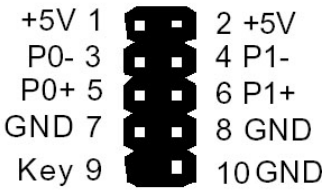
Pin Number	Function
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



USB Header

Type: 2x5 pin headers, 2.54mm pitch.

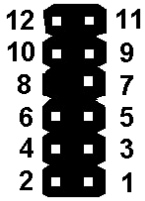
Pin Number	Function
1	+5V
2	+5V
3	D-
4	D-
5	D+
6	D+
7	GND
8	GND
9	Key
10	GND



Front Panel Interface Connector

Type: 2x6 pin header, 2.54mm pitch

Pin Number	Function
1	Power switch +
2	Reset switch +
3	Power switch -
4	Reset switch -
5	Power LED +
6	Speaker -
7	Power LED -
8	Coding Key
9	HDD LED +
10	GND
11	HDD LED -
12	Speaker +



Cash Drawer Interface Connector

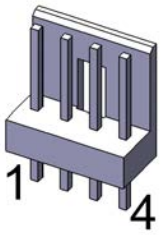
Type: 6 pin shrouded header

Pin Number	Function
1	+5V
2	CD out 1
3	CD status 1
4	CD out 2
5	CD status 2
6	nc.

Fan Connector (with PWM FAN Speed Control)

Type: 4 pin connector with Friction Lock, vertical.

Pin Number	Function
1	GND
2	+12V
3	FAN RPM
4	FAN PWM



Intrusion Interface

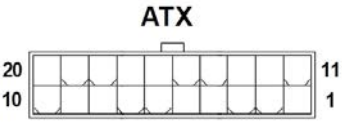
Type: 3 pin shrouded header, B3B-PH-K-S (JST) or equivalent.

This connector is not assembled by default.

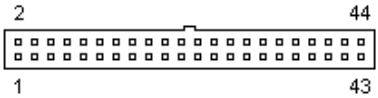
Pin Number	Function
1	GND
2	Intrusion input
3	n.c.

ATX Power

Pin Number	Function
1,2,11	+3.3V
3,5,7,13,16,16,17	GND
4,6,19,20	+5V
8	Power ok
9	5V SB
10	+12V
12	-12V
14	PSON



PATA IDE



Pin	Name	Description
1	/RESET	Reset
2	GND	Ground
3	DD7	Data 7
4	DD8	Data 8
5	DD6	Data 6
6	DD9	Data 9
7	DD5	Data 5
8	DD10	Data 10
9	DD4	Data 4
10	DD11	Data 11
11	DD3	Data 3
12	DD12	Data 12
13	DD2	Data 2
14	DD13	Data 13
15	DD1	Data 1
16	DD14	Data 14
17	DD0	Data 0
18	DD15	Data 15
19	GND	Ground
20	KEY	Key
21	DMARQ	DMA Request
22	GND	Ground
23	/DIOW	Write Strobe
24	GND	Ground

25	/DIOR	Read Strobe
26	GND	Ground
27	IORDY	I/O Ready
28	SPSYNC:CSEL	Spindle Sync/CS
29	/DMACK	DMA Ack.
30	GND	Ground
31	INTRQ	Interrupt Request
32	/IOCS16	IO ChipSelect 16
33	DA1	Address 1
34	PDIAG	Passed Diagnostics.
35	DA0	Address 0
36	DA2	Address 2
37	/IDE_CS0	(1F0-1F7)
38	/IDE_CS1	(3F6-3F7)
39	/ACTIVE	Led driver
40	GND	Ground
41	+5VL	+5 VDC (Logic)
42	+5VM	+5 VDC (Motor)
43	GND	Ground

PCI

B1	-12V	A1	TestReset
B2	TestClock	A2	+12V
B3	GND	A3	TestModeSelect
B4	TestDataOutput	A4	TestDataInput
B5	+5V	A5	+5V
B6	+5V	A6	Interrupt A

B7	Interrupt B	A7	Interrupt C
B8	Interrupt D	A8	+5V
B9	PRSNT1#	A9	nc.
B10	nc.	A10	+VI/O
B11	nc.	A11	Reserved
B12	GND	A12	GND
B13	GND	A13	GND
B14	nc.	A14	Reserved
B15	GND	A15	Reset
B16	Clock	A16	+VI/O
B17	GND	A17	Grant
B18	Request	A18	GND
B19	+VI/O	A19	Reserved
B20	Address31	A20	Address30
B21	Address29	A21	+3.3V
B22	GND	A22	Address28
B23	Address27	A23	Address26
B24	Address25	A24	GND
B25	+3.3V	A25	Address24
B26	C/BE3	A26	InitDeviceSelect
B27	Address23	A27	+3.3V
B28	GND	A28	Address22
B29	Address21	A29	Address20
B30	Address19	A30	GND
B31	+3.3V	A31	Address18
B32	Address17	A32	Address16

B33	C/BE2	A33	+3.3V
B34	GND	A34	CycleFrame
B35	InitiatorReady	A35	GND
B36	+3.3V	A36	TargetReady
B37	DeviceSelect	A37	GND
B38	GND	A38	Stop
B39	Lock	A39	+3.3V
B40	ParityError	A40	SMB clock
B41	+3.3V	A41	SMB data
B42	SystemError	A42	GND
B43	+3.3V	A43	PAR
B44	C/BE1	A44	Address15
B45	Address14	A45	+3.3V
B46	M66EN/Ground	A46	Address13
B47	Address12	A47	Address11
B48	Address10	A48	GND
B49	GND	A49	Address9
B52	Address8	A52	C/BE0
B53	Address7	A53	+3.3V
B54	+3.3V	A54	Address6
B55	Address5	A55	Address4
B56	Address3	A56	GND
B57	GND	A57	Address2
B58	Address1	A58	Address0
B59	+5V	A59	+5V
B60	Acknowledge64-bit	A60	Request64-bit

B61	+5V	A61	+5V
B62	+5V	A62	+5V

Technical Data

Microprocessor	Intel ATOM Processor D425 (single core), 1.8GHz Intel ATOM Processor D525 (dual core), 1.8GHz
Supported Systems	BEETLE /SII+, BEETLE /i8A, BEETLE /mini
Architecture	mITX form factor
Chipset	ICH8M, supporting SATA II controller, USB UHCI and EHCI controller, Interrupt controller, DMA controller, LPC interface, RTC, SMBUS host interface, PCI, Intel High Definition Audio interface, SPI
Super I/O	IT8783, supporting 5 UARTS, PS/2 keyboard and mouse interface, LPT, automatic fan speed controller, hardware monitor
Ethernet Controller	PCI-e based Realtek RTL8105E (10/100MBit), PXE
Wake On Feature	Wake-on-LAN, Wake-on-time, Wake-on-USB, Wake-on-PS/2, Wake-on-modem
Sound Controller	Audio Codec with line out, line-in and mic-in connectors in I/O shield
Cash Drawer	onboard CPLD for cash drawer, additional 6 pin JST connector for direct connection to cash drawer integrated in power supply
NVRAM	supported thru PCI riser card
Main Memory	1x SO-DIMM, 1GB up to 2GB DDR3 SDRAM technology, based on 1Gb / 2Gb technology, unbuffered non-ECC running at 667 or 800MHz
BIOS	SPI Flash, 8Mb, AMI BIOS, with customization for BEETLE systems, PnP 1.1, ACPI, DMI-support
Keyboard	PS/2 connection onboard in I/O shield, supporting Y-cable for Mouse support

Serial Interfaces	COM1 onboard in I/O shield, DSUB-9 pins male connector, all other onboard 2x7 pin headers supporting powered COM
LPT	onboard in I/O shield, supporting SPP, EPP, ECP
USB	USB2.0, up to 8 ports. USB 1, 2 – 2 ports stacked connector, series A in I/O shield (together with PS/2), USB 3,4 – 2 ports stacked connector, series A in I/O shield (together with LAN), all other – Internal 2x5 pin headers
Status Display	supports LED (ON, Standby, OFF, HDD) activities, power and reset button (front panel connector)
HDD, ODD	connection SATA II interface (3.0Gb/s) and 44 pin RM2 standard PATA
PCI slot	32bit, 33MHz, PCI2.2, with riser card support and SMBUS
Video out	VGA only
Battery	for RTC and Super-I/O, Type: CR2032, 220mAh
Fuses	poly switches for +5V of powered COM, all USB (2 ports sharing one fuse), PS/2, VGA, +12V of powered COM
I/O Shield Connectors	stacked USB and PS/2 keyboard + mouse, VGA, stacked USB and LAN, standard COM1, audio (MIC in, line in, line out), LPT
Internal Connectors	1x DDR3 SO-DIMM socket, 2x internal SATA connector, 1x HDD/CF IDE docking connector, 2x USB (2 ports each), 4x powered COM 2x7 pin headers, 2x 4 pin fan connector supporting fan speed control thru PWM, front panel interface, cash drawer interface, header for intrusion detect
Board Dimension	170.0mm x 170.0 mm

Changing the Battery

The BEETLE POS systems are equipped with a lithium battery on the motherboard (see page 13) to ensure data retention, the time and the setup parameters. The battery should be changed approximately every five years.

When inserting the new battery, make sure the polarity is correct. This is marked in the socket. Incorrect replacement of the battery may lead to the danger of explosion.

The battery is located in a socket on the Motherboard. To gain access to the battery, proceed as described in the according chapters of your BEETLE **User Manual.**

See:

http://www.wincor-nixdorf.com/internet/site_EN//EN/Support/Downloads/POSLotterySystems/Manuals/manuals_node.html

The lithium battery must be replaced only by identical batteries or types recommended by Wincor Nixdorf International.

You can return the used batteries to your Wincor Nixdorf International sales outlet.

Batteries containing harmful substances are marked accordingly.
The chemical denotations are as follows: CD = Cadmium; Pb = Lead, Li = Lithium.

This symbol on a battery tells you that batteries containing harmful substances must not be disposed of as household waste. Follow the country specific laws and regulations. Within the European Union you are legally bound to return these batteries to the service organization where you purchased the new battery.

The setup parameters must be reset each time the battery has been changed.

Addendum

Sleep States

S0	**Normal operation (“On”)**
S3	**Suspend to RAM / “Stand By”**
S4	**Suspend to Disk / “Hibernation”**
S5	**Soft Off**

LED LAN (RJ45)

Left LED	Off	10 Mbit
	Constantly green	100 MBit
Right LED	Constantly yellow	Connection to network
	Blinking yellow	Data transfer

BIOS Setup

The D425/D525-CPU main board is equipped with an AMI BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface
between the processor and the rest of the main board components. This section explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

Even if you are not prompted to use the Setup program, you might want to change the configuration of your system in the future. For example, you may want to enable the Security Password Feature or make changes to the power management settings. It will then be necessary to reconfigure your system using the BIOS Setup program so that the system can recognize these changes and record them in the CMOS RAM or the FLASH ROM.
All setup data is stored in a non volatile memory (CMOS RAM). When you remove the CMOS battery all parameters will be lost.

Standard BIOS Version

The BIOS ROM of the system holds the Setup utility. When you turn on the system, it will provide you with the opportunity to run this program. This appears during the Power-On Self Test (POST). Press <F2> to call the Setup utility. If you are a little bit late pressing the mentioned key, POST will continue with its test routines, thus preventing you from calling Setup. If you still need to call Setup, reset the system by pressing <Ctrl> + <Alt> + <Del>. You can also restart by turning the system off and then on again. But do so only if the first method fails.

If you like to change the boot order only once, you can press the <F10> key during the POST is running. At the end you will see a Pop-Up window with all the devices the system is finding. With the keys <UP> and <DOWN> you select the boot device.

The Setup program has been designed to make it as easy as possible.
It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.

When you invoke Setup, the main program screen will appear. Read more about the Setup entries on the following pages.

Because the BIOS software is constantly being updated, the following BIOS screens and descriptions are for reference purposes only and may not reflect your BIOS screens exactly.

BIOS Menu Bar

The top of the screen has a menu bar with the following sections:

INFO	Use this menu for information only
MAIN	Use this menu to make changes to the basic system configuration.
ADVANCED	Use this menu to enable and make changes to the advanced features.
BOOT	Use this menu to configure the default system device used to locate and load the Operating System.
SECURITY	Use this menu to enable a supervisor or user password and Intrusion Detection.
EXIT	Use this menu to exit the current menu or specify how to exit the Setup program.

To access the menu bar items, press the right or left arrow key on the keyboard until the desired item is highlighted.

Legend Screen

The right frame displays the key legend. The keys in the legend frame allow you to navigate through the various setup menus. The following table lists the keys found in the legend with their corresponding alternates and functions.

Navigation Key(s)	Description of Functions
← or → (keypad arrows)	Select the menu item to the left or right.
↑ or ↓ (keypad arrows)	Moves the highlight up or down between fields.
+ (plus key) - (minus key)	Change field contents.
<Tab>	Jumps from one field to the next.
<F1>	Opens a general Help Screen with extended informations.
<F10>	Saves changes and exits Setup.
<Esc>	Opens a windows to select between exit and return to setup

General Help

In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. This screen can be called from any menu by simply pressing <F1>. The General Help screen lists the legend keys with their corresponding alternates and functions.

Scroll Bar

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down keys to scroll through the entire help document.

Press <Home> to display the first page, press <End> to reach the last page. To exit the help window, press the <Enter> or <Esc> key.

Sub-Menu

Note that a right pointer symbol "➢" appears left of certain fields. This pointer indicates that a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter.

To call a sub-menu, simply move the highlight to the field and press <Enter>.

The sub-menu then will appear immediately. Use the legend keys to enter values and move from field to field within a sub-menu just as you would do within a menu. Use the <Esc> key to return to the main menu.

Take some time to familiarize yourself with each of the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F9>. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right side of each menu. This window displays the help text for the currently highlighted field.

Info Screen

When the Setup program is accessed, the following info screen appears:

Product Name:	D425-CPU-STANDARD
BIOS Version:	WN STD xx/yy mm/dd/yyyy
MAC-Address:	00-21-05-16-EE-B2
UUID Info:	FF-FF-FF-FF-FF-FF-FF-FF
	FF-FF-FF-FF-FF-FF-FF-FF
System:	###----------

Mainboard:	----------

PwrSupply:	----------

This screen is for information only. There is nothing that could be changed within Setup.
All information is intended to facilitate the support of your system.

Product Name

This text is fixed for your mainboard with standard BIOS. This board is also called “D425-CPU-STANDARD”.

BIOS Version

The BIOS version is displayed in the release format xx/yy, followed by date of release in international format.

MAC Address

The Ethernet MAC-Address of the Onboard LAN Controller is displayed at this line if [Enabled].

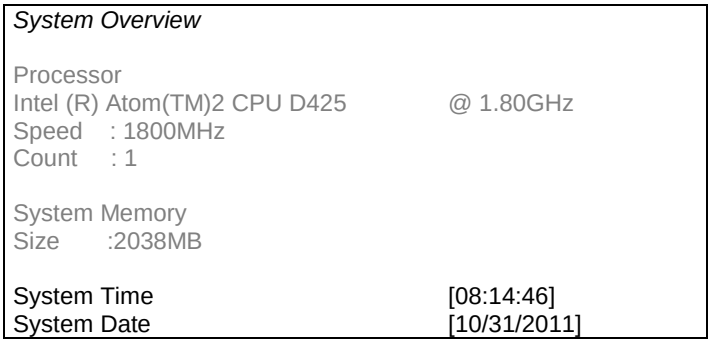
UUID Info

A UUID is an identifier standard used in software construction, standardized by the Open Software Foundation. The intent of UUIDs is to enable distributed systems to uniquely identify information without significant central coordination.

System, Main board, Power Supply

The default placeholders may be replaced by specific data from factory, describing configuration, serial number etc. for each device.

Main Menu



System Time [XX: XX: XX]

Sets your system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute, and second are: Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59). Press <Enter> to terminate every entry value and reach the next position. On the upper right frame find the keys listed to modify the values.

System Date [XX/XX/XXXX]

Sets your system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day and year are: Month: (1 to 12), Day (1 to 31), Year: (up to 2079).

Advanced Menu

Advanced Settings

- Hardware Monitoring
- SuperIO Information

WARNING: Setting wrong values in below sections may cause system to malfunction.

- CPU Configuration
- IDE Configuration
- USB Configuration
- Hardware Control

- North Bridge Configuration

Sub Menu ➢ Hardware Monitoring

Hardware Monitoring

CPU Temperature Sensor	55°C/131°F
Board Temperature Sensor	39°C/102°F
CPU Speed	N/A
PSU Speed	N/A
CPU Core	1.152 V
+1.50V	1.488 V
+3.30V	3.376 V
+5.00V	5.134 V
+12.0V	12.032 V
- 12.0V	-11.475 V
+1.05V	1.040 V
VBAT	3.024 V

CPU/Board Temperature Sensors [xx °C/xxx °F]

The onboard hardware monitor is able to detect the motherboard and CPU temperatures (for supported processors only).

Fan_CPU / PSU Speed [xxxx rpm]

The onboard hardware monitor is able to detect the CPU fan speed and the power supply (PSU) fan speed in rotations per minute (rpm).

Several Voltages [xx.x V]

The onboard hardware monitor is able to detect the voltage output by the onboard voltage regulators.

VBAT

This Value shows the current state of CMOS Battery. A discharged battery will reported during the POST. Please change the battery according to the chapter “Changing the Battery”, see 29.

Sub Menu ➢ SuperIO Information

Display Ite8783 Super IO Configuration

Serial Port1 Address	[3F8]
Serial Port1 IRQ	[4]
Serial Port2 Address	[2F8]
Serial Port2 IRQ	[3]
Serial Port3 Address	[3E8]
Serial Port3 IRQ	[10]
Serial Port4 Address	[2E8]
Serial Port4 IRQ	[10]
Serial Port5 Address	[2F0]
Serial Port5 IRQ	[5]
Parallel Port6 Address	[378]
Parallel Port Mode	[ECP]
ECP Mode DMA Channel	[DMA3]
Parallel Port IRQ	[IRQ7]

This setup screen shows the programmed values of the 5 onboard legacy serial ports and 1 parallel port. This is an on-screen information only (no options).

Sub Menu ➢ CPU Configuration

Configure advanced CPU settings	
Manufacturer: Intel	
Intel (R) Atom(TM)2 CPU D425	@ 1.80GHz
Frequency :1.80GHz	
FSB Speed :800MHz	
Cache L1 :24 KB	
Cache L2 :512 KB	
Ratio Actual Value :9	
Max CPUID Value Limit	[Disabled]
Execute-Disable Bit Capability	[Enabled]
Hyper Threading Technology	[Enabled]
Intel (R) SpeedStep (TM) tech	[Disabled]
Intel (R) C-STATE (TM) tech	[Enabled]
Enhanced C-States	[Enabled]

The first lines lists information about the installed CPU. You can use this screen to select options for the CPU Configuration. The content of the CPU configuration setup screen varies depending on the installed processor. On the upper right frame you can see a short description of each changeable setup point.

Max CPUID Value Limit

Allows you to determine whether to limit CPUID maximum value. Set this item to [Disable] for Windows XP operating system, set this item to [Enabled] for legacy operating system. Configuration options: [Disabled] [Enabled]

Execute-Disable Bit Capability

Enable or disables Intel Execute Disable Bit function. This function may enhance protection for the computer, reducing exposure to viruses and malicious buffer overflow attacks when working with supporting software. Configuration options: [Disabled] [Enabled]

Hyper Threading Technology

Allows you to determine whether to enable the multi-threading function when using an Intel CPU that supports multi-threading technology. This feature only works for operating systems that supports multi-threading technology. Configuration options: [Disabled] [Enabled]

Intel (R) SpeedStep (TM) tech

Allows you to determine whether to enable the SpeedStep function when using an Intel CPU that supports SpeedStep technology. This feature only works for operating systems that supports this technology. Configuration options: [Disabled] [Enabled]

Intel (R) C-STATE (TM) tech

Allows you to determine whether to enable the C-State technology function when using an Intel CPU that supports this technology. This feature reduces the internal CPU-Speed when system is in IDLE state. Configuration options: [Disabled] [Enabled]

Enhanced C-States

Allows you to determine whether to enable the Enhanced C-State technology function when using an Intel CPU that supports this technology. This feature reduces the internal CPU-Speed and disables the internal cache when system is in IDLE state. Configuration options: [Disabled] [Enabled]

Sub Menu ➢ IDE Configuration

IDE Configuration	
ATA/IDE Configuration	[Compatible]
Legacy IDE Channels	[SATA Pri, PATA Sec]
➢ Primary IDE Master	[Not Detected]
➢ Primary IDE Slave	[Not Detected]
➢ Secondary IDE Master	[Not Detected]
➢ Secondary IDE Slave	[Not Detected]
IDE Detect Time Out (Sec)	[35]

The onboard printed SATA port numbers have the following references to the setup entries:

- SATA1 Primary IDE Master
- SATA3 Primary IDE Slave

ATA/IDE Configuration

Configuration options: [Disabled] [Compatible]

[Compatible] With this option the second line below changed the text to: <Legacy IDE Channels> With this option the user has the choice to toggle between three IDE modes. SATA Only, SATA Primary, PATA Secondary or PATA only

Primary IDE Master/Slave & Secondary IDE Master/Slave

Primary IDE Slave	
Device :Hard Disk	
Vendor :TOSHIBA MK1637GSX	
Size :160.0GB	
LBA Mode :Supported	
Block Mode :16Sectors	
PIO Mode :4	
Async DMA :MultiWord DMA-2	
Ultra DMA :Ultra DMA-5	
S.M.A.R.T. :Supported	
Type:	[Auto]
LBA/Large Mode	[Auto]
Block (Multi-Sector Transfer)	[Auto]
PIO Mode	[Auto]
DMA Mode	[Auto]
S.M.A.R.T.	[Auto]
32Bit Data Transfer	[Enabled]

Note: Before attempting to configure a hard disk drive, make sure you have the configuration information supplied by the manufacturer of the drive. Incorrect settings my cause your system not to recognize the installed hard disk. To allow the BIOS to detect the drive type automatically, select [Auto].

Type [Auto]

Select [Auto] to automatically detect an attached SATA drive. If automatic detection is successful, the correct values will be filled in for the remaining fields on this sub-menu. If automatic detection fails, your hard disk drive may be too old or too new. You can try to update your BIOS or to enter the SATA drive parameters manually.
For special cases you can select a drive type here.
The options are [Not Installed] [Auto] [CD/DVD] [ARMD]

LBA/Large Mode [Auto]

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are [Auto] [Disabled]

Block (Multi-Sector Transfer) [Auto]

This option sets the block multi sector option. If [Disabled] the data transfer from and to the device occurs one sector at a time. If [Auto] is selected all data transfer will be done with multiple sectors at a time.
The options are [Auto] [Disabled]

PIO Mode [Auto]

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 trough 4 provides successively increased performance.
Configuration options: [Auto] [0] - [4]

DMA Mode [Auto]

This field can increase the performance like the PIO Mode entry, two Configuration options: [Auto] [SWDMAx] [MWDMAx] [UDMAy] (x=0-2, y=0-5)

S.M.A.R.T. [Auto]

Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) feature can help to predict impending drive failure. This feature allows your system to report read/write errors of the hard drive and to issue warnings when a third party hardware monitor utility is installed.
Configuration options: [Auto] [Enabled] [Disabled]

32Bit Data Transfer [Enabled]

This field sets the 32-bit data transfers option.
Configuration options: [Disabled] [Enabled].

IDE Detect Time Out (Sec)

This field selects the time out value for detecting ATA/ATAPI devices.

Sub Menu ➢ USB Configuration

USB Configuration
Module Version – 2.245-14.4

USB Devices Enabled :
1 Mouse

Legacy USB Support	[Enabled]
USB 2.0 Controller Mode	[HiSpeed]
BIOS EHCI Hand-Off	[Enabled]

Legacy USB Support [Enabled]

This motherboard supports Universal Serial Bus (USB) devices. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB drivers loaded on the system. If you like to use a USB-Floppy disk or a USB CD-ROM device for booting, you have to enable this setup point and after detecting of this USB device from the BIOS, you have to switch the boot order to the appropriate device. In the AUTO mode is the USB support switched off, when no Legacy USB device was found. Configuration Options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [HiSpeed]

This option can reduce the transfer rate of a USB Hispeed device to Full-speed. Configuration Options: [HiSpeed] [FullSpeed]

BIOS EHCI Hand-Off [Enabled]

This entry is useful for the EHCI handling in some Windows operating systems like Windows XP. Mostly this option must be enabled. Configuration Options: [Enabled] [Disabled]

Sub Menu > Hardware Control

Hardware Configuration	
Reset Config Data	[No]
Audio Controller	[Enabled]
LAN Controller	[Enabled]
PXE Boot ROM	[Disabled]
Display Output to COM3	[No]
Com-Port 5	[Enabled]
Parallel Port Address	[378]
Parallel Port Mode	[ECP]
ECP Mode DMA Channel	[DMA3]
Parallel Port IRQ	[IRQ7]
After Power Failure	[Last State]
USB+PS/2 Wakeup from S3/S4	[Enabled]
Wake on Ring	[Disabled]

Reset Config Data [No]

[Yes] erases all configuration data in NVRAM (Non Volatile RAM) area and create a new table of hardware resources. Configuration Options: [No] [Yes]

If you are facing problems after adding or removing any hardware components to the system it might be wise to select the [Yes] option once. This allows the BIOS to reconfigure available hardware resources.

Audio Controller [Enabled]

Setting item to [Enable] will allow the onboard High Definition Audio to operate properly. Setting item to [Disabled] will remove the onboard audio controller from PCI config space. Configuration Options: [Enabled] [Disabled]

LAN Controller [Enabled]

This point switches physical ON or OFF the Onboard LAN Controller. The PXE Boot ROM will be loaded, when the option PXE Boot ROM in the next line is enabled. Configuration Options: [Disabled] [Enabled]

Display Output to COM3 [No]

Some systems may be configured without a full screen display, just using a small display connected to the COM3 serial port. [Enabled] will redirect diagnostic information during PowerOnSelfTest to this serial port, giving control about the system to smaller displays as well.
Configuration Options: [No] [Yes]

COM-Port 5

This option switches physical ON or OFF the COM-Port 5.
Configuration Options: [Disabled] [Enabled]

Parallel Port Address

This option switches the Parallel Port Adresses.
Configuration Options: [Disabled] [387] [278] [3BC]
After choosing an address the port mode and IRQ are available.

After Power Failure [Last State]

Select whether you want your system to be rebooted after power has been interrupted. [Power off] leaves your system off and [Last State] reboots your system if it was active before power loss. Is the key [Power On] selected, the system will startup anytime power is available.

Configuration options: [Power off] [Follow AC/Power] [Last State].
In mode [Power On] the front button is disabled. This means that there is no way to force down the system pressing the front button for more than four seconds, avoiding accidental shutdown.

USB+PS/2 Wakeup from S3/S4 [Enabled]

You may select to power some devices during Standby- or Hibernate-Mode, to enable them to wake up the system.
Configuration Options: [Enabled] [Disabled]

Wake-on Modes

Please note that you have to shut down the system in power saving modes by OS before you can use Wake-on modes. Switching off the system by mainpower switch or frontbutton-override will not initialize system wakeup functions. See following table, which wakeup events are available from different power states:

	Standby (S3)	Hibernate (S4)	Soft off (S5)
Front Button	Yes	Yes	Yes
LAN	Yes	Yes	Yes
Modem (Note1)	Yes	Yes	Yes
Time	Yes	Yes	Yes
PS/2	Yes	Yes	No
USB (Note2)	Yes	Yes	No

Note 1: “Yes” is valid only, if the option <Wake on Ring> is [Enabled].
Note 2: “Yes” is valid only, if option <USB Device Wakeup from S3/S4> is [Enabled].

Wake On Ring [Disabled]

This allows enabling or disabling power up the BEETLE when the modem receives a call while the BEETLE is in Soft-Off or Hibernate mode.

NOTE: The BEETLE cannot receive or transmit data until the system and applications are fully running, thus connection cannot be made on the first try. Turning an external modem off and then back on while the BEETLE is off causes an initialization string that will cause the system to power on.
Configuration options: [Disabled] [Enabled].

Sub Menu ➢ North Bridge Configuration

North Bridge Chipset Configuration	
PCI MMIO Allocation: 4GB to 3072	
Initiate Graphic Adapter	[IGD]
DVMT Mode Select	[DVMT Mode]
DVMT/FIXED MEMORY	[Maximum DVMT]

Initiate Graphic Adapter

This option enable an internal or an external graphic device.
Configuration options: [IGD] for internal graphic device and [PCI/IGD] for an external graphic device.

DVMT Mode Select

This option enable the dynamic video memory technology. This allow the system to share fixed or dynamic video memory with the system memory.
Configuration options: [DVMT Mode] [Fixed Mode]
Choose the shareable memory size with the option DVMT/FIXED Memory.
Configuration options: [128],[256],[Maximum DVMT]

Boot Menu

The Boot Menu enables you to set the order of bootable devices to a regular base. Pressing the function key <F10> while POST is running will change the boot order only once. You will see a Pop-Up window listing all devices the system is able to boot from. Select the boot device with keys <Up> and <Down>. Press <Enter> key to start the selected device booting.

Please select Boot Device	
USB	Scan Disk U3 Cruzer Micro 8.0
Network	IBA GE SLOT 0200 v 1353
Boot Settings	
Boot Settings Configuration	
1st Boot Device	[Not Installed]
2nd Boot Device	[Not Installed]
3rd Boot Device	[SATA: TOSHIBA MK163]
4th Boot Device	[Network:IBA GE Slo]
Hard Disk Drives	

Hard Disk Drives	
1st Drive	[SATA:TOSHIBA MK163]
2nd Drive	[USB:B4F SLIM]

'N' Boot Device

These menu entries are used to specify the boot sequence from the available devices. Every boot device (from 1 till 4) specifies a device group. The groups are Removable, Optical, Hard Disk, and ROM Devices from top to bottom. Is more than one identical device added, an additional menu point below the boot devices will be visible. Inside of this group you specify the boot order of the identical devices. Below you can see the contents of the Hard Disk Drives. So, the boot order will be:

1st SATA: TOSHIBA,
2nd USB:B4F SLIM
3rd Network: IBA GE

Boot Settings Configuration

Boot Settings Configuration	
Quick Boot	[Enabled]
Bootup Num-Lock	[On]
PS/2 Mouse Support	[Auto]

Quick Boot [Enabled]

Allows the BIOS to skip some tests during the POST is running. This will decrease the time needed to boot the system.
Configuration Options: [Enabled] [Disabled]

Bootup Num-Lock [On]

Select the Power-On state for Numlock of an attached keyboard.
Configuration Options: [On] [Off]

PS/2 Mouse Support [Auto]

Select the PS/2 Mouse Support of the System.
Configuration Options: [Auto] [Enabled] [Disabled]

Security Menu

Security Settings	
Supervisor Password: Not Installed	
User Password :Not Installed	
Change Supervisor Password	
Change User Password	
Intrusion Detection	[Disabled]
Case Status	[Closed]

Change Supervisor Password

This field allows you to set the password. Highlight the field and press <Enter>.

Type a password and press <Enter>, you can type up to eight alphanumeric characters. Symbols and other characters are ignored. To confirm the password, type the password again and press <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menu.

To clear the password, highlight this field and press <Enter>. The same dialog box as above will appear. Press <Enter> and the password will be set to [Disabled].

Change User Password

This field allows you to set the password. Highlight the field and press <Enter>.

Type a password and press <Enter>, you can type up to eight alphanumeric characters. Symbols and other characters are ignored. To confirm the password, type the password again and press <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menu.

To clear the password, highlight this field and press <Enter>. The same dialog box as above will appear. Press <Enter> and the password will be set to [Disabled].

Intrusion Detection [Disabled]

If the system cover is removed and the Intrusion Detection is [Enabled], the system stops during the next reboot or power up process and display a

warning message. After this warning the boot process stops and the user has to go into the BIOS setup which resets the open case detection automatically. Additionally is a viewing point of the case open switch below the enable/disable entry point placed. This message will signalize the actual case open status directly. Configuration Options: [Disabled] [Enabled]

Exit Menu

Exit Options
Save Changes and Exit Discard Changes and Exit Discard Changes Load Defaults

Once you have made all your selections from the various menus in the Setup program, you should save your changes and exit Setup. Select Exit from the menu bar to display the following menu.

Save Changes and Exit

Once you have finished making selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the BEETLE is turned off. Once this option is selected, a confirmation is asked. Select [Ok] to save changes and exit.

Discard Changes and Exit

This option should only be used if you do not want to save the changes you have made to the Setup program. If you have made changes to fields other than system date, system time, and password, the system will ask for confirmation before exiting.

Discard Changes

This option doesn't save the changes at all like the entry 'Discard Changes and Exit'. After [Ok], the cursor is jumping up to 'Save Changes and Exit.

Load Defaults

This option allows you to load the default values for each of the parameters on the Setup menu. When this option is selected or if <F9> is pressed, a confirmation is requested. Select [Ok] to load default values. You can now select Exit Saving Changes or make other changes before saving the values to the non-volatile RAM.

Test Points Codes

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O port address 80h. Use this code during trouble shooting to establish where the system failed and what routine has been performed.

Bootblock Initialization Code Checkpoints

POST Code (Hex)	Description
D0	Early Boot Strap Processor initialization like microcode update, frequency and other CPU critical initialization. Early chipset initialization is done.
D1	Early super I/O init is done including RTC and keyboard controller. NMI is disabled. Perform keyboard controller BAT test. Save power-on CPUID value in scratch CMOS. Go to flat mode with 4 GB limit and GA 20 enabled.
D2	Verify the boot block checksum. System will hang here if check-sum is bad.
D3	Disable CACHE before memory detection. Execute full memory sizing module. Start memory refresh and do additional chipset initialization. Re-enable CACHE.
D4	Test base 512 KB memory. Adjust cache first 8 MB and set stack.
D5	Bootblock code is copied from ROM to lower system and control is given to it. BIOS now executes out of RAM. Copies BIOS from ROM to RAM for faster access. Perform main BIOS checksum and updates recovery status accordingly.
D6	If BIOS recovery is necessary, control flows to the recovery module.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.

D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1 MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST.
DC	System is waking from ACPI S3 state.

POST Code Checkpoints

POST Code (Hex)	Description
03	Disable NMI, Parity, Video for EGA, and DMA controllers. Init BIOS, POST Runtime data area. Also init BIOS modules on POST entry and GPNV area. Init CMOS
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Init data variables that are based on CMOS setup questions. Init both 8259 compatible PICs in the system.
05	Init the interrupt controlling hardware and interrupt vector table.
06	Do R/W test to CH-2 count reg. Init CH-0 as system timer. Enable IRQ-0 in PIC for system timer interrupt.
07	Fixes CPU POST interface calling pointer.
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte after auto detection of KB/MS is done.
0A	Init the 8042 keyboard controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of keyboard in KBC port.
0E	Testing and initialization of different input devices. Also, update the kernel variables. Uncompress all available BIOS logo and Silent logo modules.
13	Early POST init of chipset registers.
20	Relocate System Management Interrupt vector for all CPU in the system.
24	Uncompress and init any platform specific BIOS modules.
2A	Init different devices through DIM
2C	Detection and init of the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it.Give control to ADM module for initialization. Activate ADM module.
33	Init the silent boot module. Set the window for displaying textin-formation.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.

38	Initializes different devices through DIM.
39	Init DMA-1 & DMA-2
3A	Init RTC date/time.
3B	Test for total memory installed in the system. Also, check for F2 or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers
40	Detect different devices (parallel ports, serial ports, and coprocessor in CPU, etc.) successfully installed to the system and update the BDA, EBDA, etc..
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory. Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize INT-13 and prepare for IPL detection.
78	Initialize IPL devices controlled by BIOS and option ROMs.
7C	Generate and write contents of ESCD in NVRAM.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested. Check boot password if installed.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables.
8E	Program the peripheral parameters. Enable NMI.
90	Initialization of system management interrupt by invoking all handlers.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Initializes the Microsoft IRQ Routing Table.
A4	Display boot option popup menu.
A7	Displays the system configuration screen if enabled. Initialize the CPU before boot, which includes the programming of the MTRRs.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector.
AB	Prepare BBS for INT19h boot. Init MP tables.
AC	End of POST initialization of chipset registers. De-initializes the ADM module.
B1	Save system context for ACPI. Prepare CPU for OS boot including final MTRR values.
C0	Early CPU init start disable Cache, init Local APIC.
C1	Set up boot strap processor for Information.
C2	Set up boot strap processor for POST.
C5	Enumerate and set up application processors.
C6	Re-enable cache for boot strap processor.

C7	Early CPU init exit.
00	Passes control to OS Loader (typical INT19h).

Boot Block Beep Codes

Number of Beeps	Description
1	No Media present.
2	'BIOS.ROM' file not found in root directory.
3	Insert next device if multiple devices are used for recovery.
4	Flash Programming successful.
5	File read error.
7	No Flash EPROM detected.
10	Flash Erase error.
11	Flash Program error.
12	'BIOS.ROM' file size error.
13	BIOS.ROM image mismatch (file layout does not match image present in flash device).

POST BIOS Beep Codes

Number of Beeps	Description
1	Memory refresh timer error.
3	Base memory read/write test error
6	Keyboard controller BAT command failed
7	General exception error (processor exception interrupt error)
8	Display memory error (system video adapter)

Troubleshooting POST BIOS Beep Codes

Number of Beeps	Description
1, 2	Intrusion sensor is activated
Constant	No memory module included.

Abbreviations

ADM	AMI Display Manager
BIOS	Basic Input and Output System
CMOS	Complementary Metal Oxide Semiconductor
CPLD	Complex Programmable Logic Device
CPU	Central Processing Unit
DIMM	Dual Inline Memory Module
DMA	Direct Memory Access
DVMT	Dynamic Video Memory Technology
DVI	Digital Video Interface
EBDA	Extended BIOS Data Area
ECP	Extended Capabilities Port
EHCI	Enhanced Host Controller Interface
ESCD	Extended System Configuration Data
EPP	Enhanced Parallel Port
FSB	Front Side Bus
GPNV	General Purpose Non-Volatile (RAM)
ICH	I/O Controller Hub
IDE	Integrated Drive Electronics
IGD	Internal Graphic Device
IPL	Initial Program Load (Device)
LAN	Local Area Network
LBA	Logical Block Addressing
MAC	Media Access Control
MTRR	Memory Type Range Register
MP	Multiple Processors
NVRAM	Non-volatile Random Access Memory
P-ATA	Parallel AT Attachment (old version of hard disk interface)
PCI	Peripheral Component Interconnect
PnP	Plug and Play
POS	Point of Sales
POST	Power On Self Test
PWM	Pulse Width Modulation
RAM	Random Accessible Memory
RI	Ring Indicator
ROM	Read Only Memory
RS	Retail Systems

SATA	Serial AT Attachment
SMB	System Management Bus
SMRAM	System Management RAM
SPI	Serial Peripheral Interface
TDP	Thermal Design Power
TPM	Trusted Platform Module
UHCI	Universal Host Controller Interface
USB	Universal Serial Bus
UUID	Universal Unique IDentifier
VGA	Video Graphics Array

Wincor Nixdorf International GmbH
D-33094 Paderborn

Order No.: ***01750220414B***